



SASIG 3D-MBE Workgroup

April 14th 2016

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AIAG & SASIG MBE Workgroup

SASIG is a global consortium of automotive standards organizations.



SASIG
strategic automotive product
data standards industry group



GALIA

AIAG

Automotive Industry Action Group

ODETTE

SWEDEN

JAMA

JAPAN AUTOMOBILE MANUFACTURERS ASSOCIATION, INC.

JAPIA

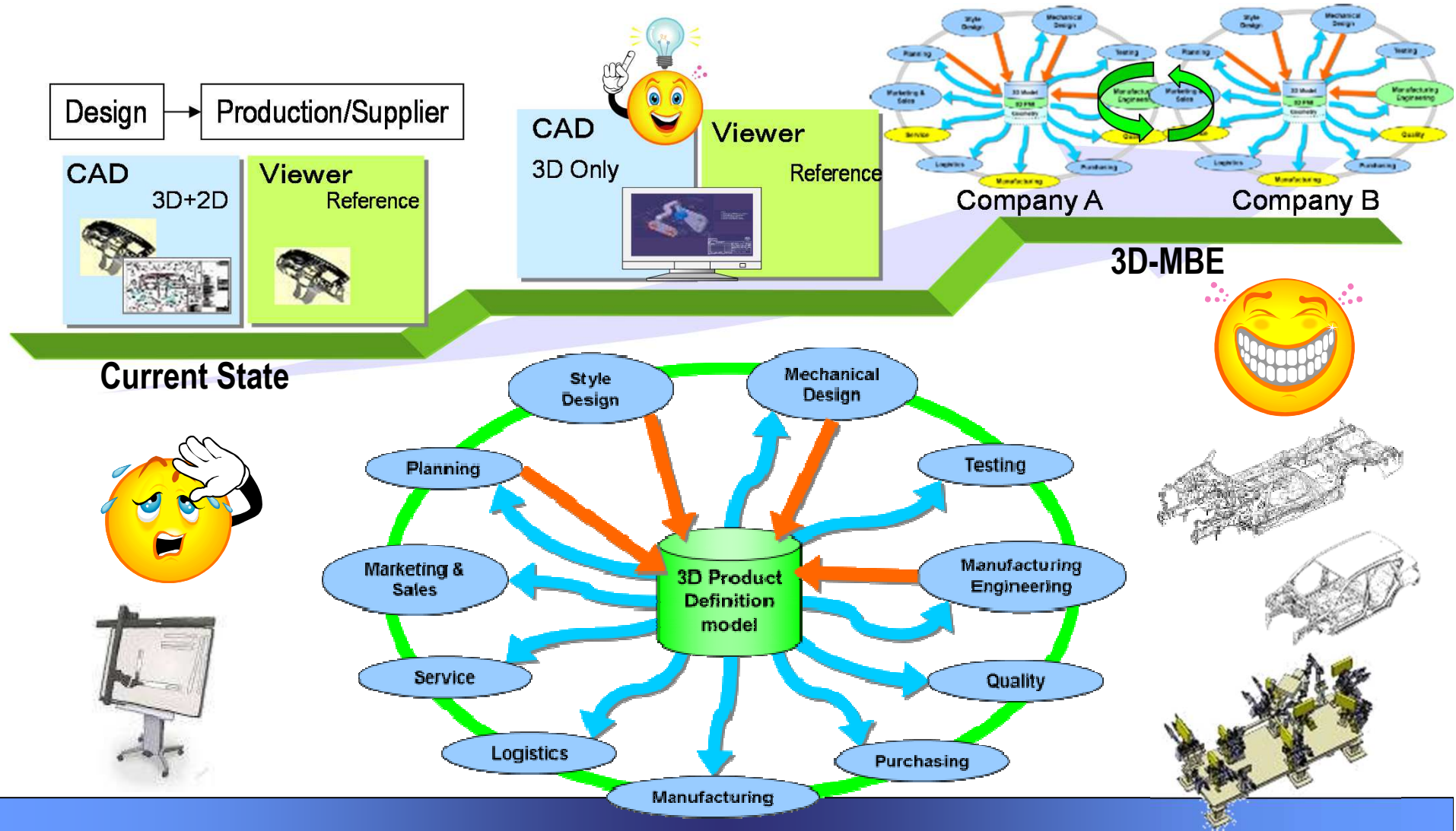
3D-MBE Working Group



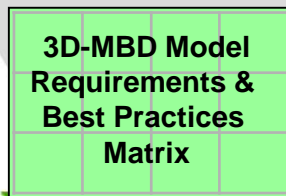
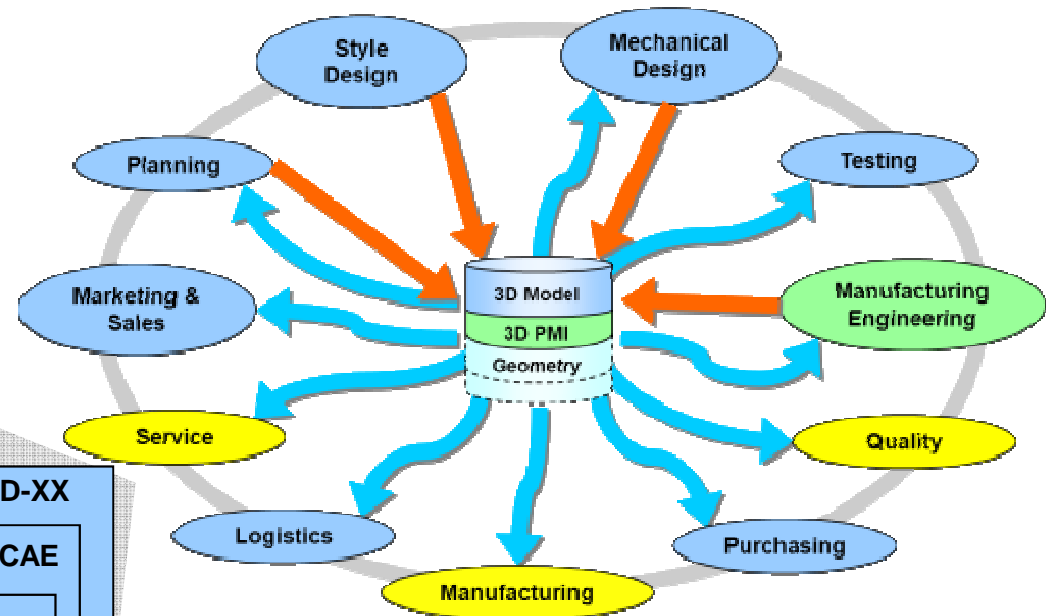
Vision	<ul style="list-style-type: none">• Move the automotive industry to 3D Model Based Enterprise (3D-MBE)
Mission	<ul style="list-style-type: none">• To Promote the implementation of the 3D-MBD model to enable seamless sharing of Product information within the extended enterprise and the Automotive industry
Scope	<ul style="list-style-type: none">• 3D Model Based Design Penetration (AIAG)<ul style="list-style-type: none">◦ Drawing Elimination, Virtual Validation, 3D Work Instructions• 3D Model Based Design Obstacle Elimination (JAMA)<ul style="list-style-type: none">◦ Die Engineering, Spot Welding, Inspection, Service Manuals• 3D Model Based Design Exchange (GALIA)
Deliverables	<p>3D-MBE White Paper</p> <ul style="list-style-type: none">• Introduction to 3D-MBE• Survey Results• Maturity Index / Self Assessment• Best practices guideline to achieve 3D-MBE maturity• 3D-MBE Functional Requirements derived from the 3D-MBE initial 5 use cases

3D-MBE Vision

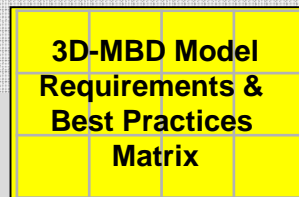
To Promote the implementation of the 3D-MBD Model to enable seamless sharing of Product information within the extended enterprise and the Automotive industry



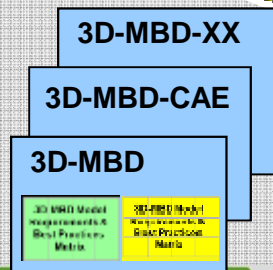
SASIG 3D-MBE Workgroup Roadmap



- Die Engineering
- Spot Welding
- Inspection Quality Check
- Service Manual
- Drawing Elimination (3D PMI)



- Virtual Validation
- 3D Work Instructions
- 3D-MBE Data Exchange



2015

2017

...

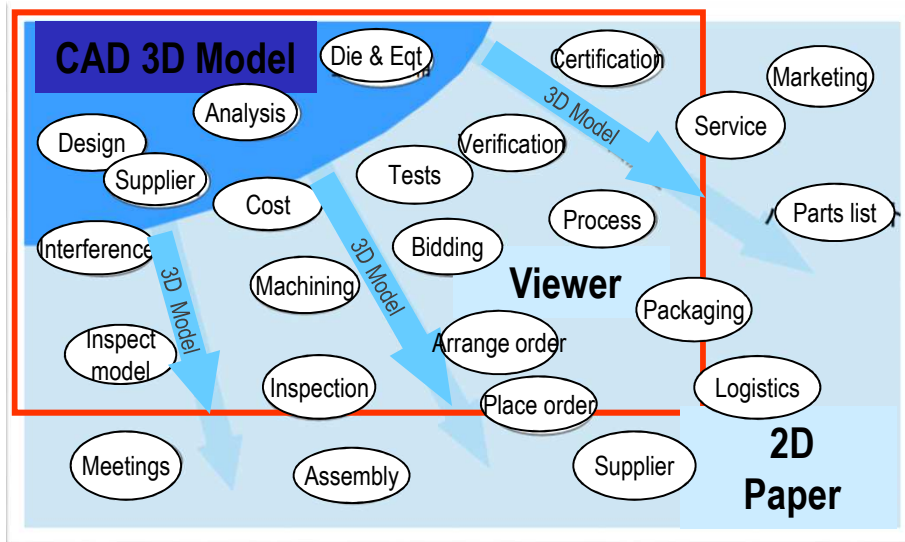
Future

MBE Workgroup Participants

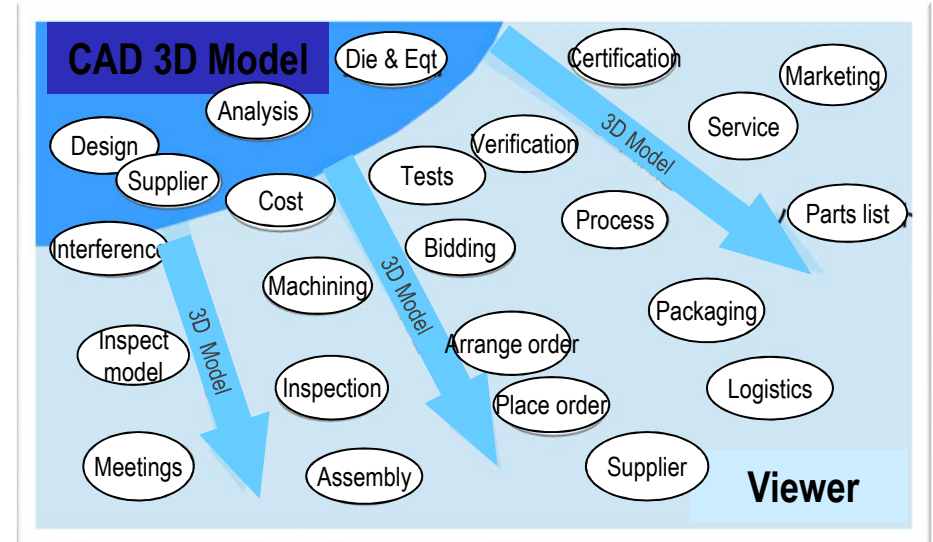


- AIAG – 15+ active members (OEMs, Tier1s & Software Providers)
- JAMA – OEMs, Suppliers and Software Vendors (50+)
- GALIA – PSA & Renault, Faurecia, Valeo, Continental

What is the role of a Drawing?



Current State



Future State

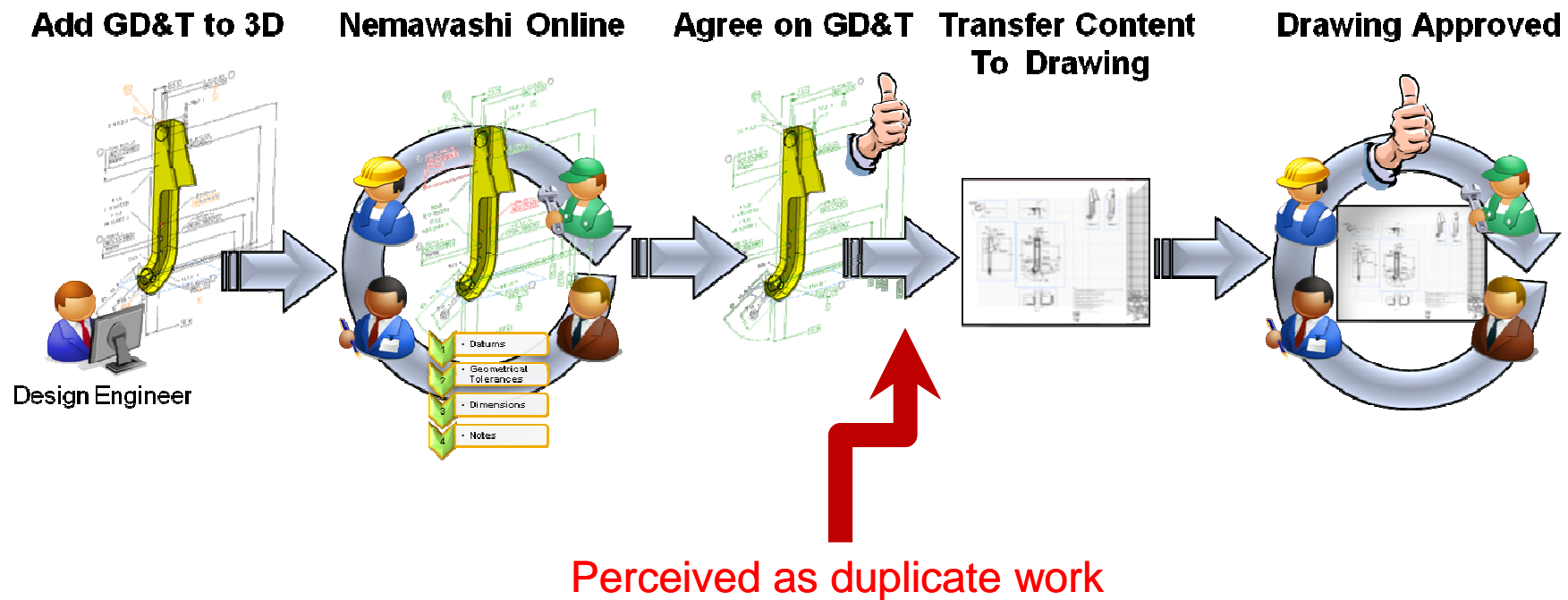


Too big of a jump

All major Automotive Companies have been trying for the past 10 years to implement full 3D.

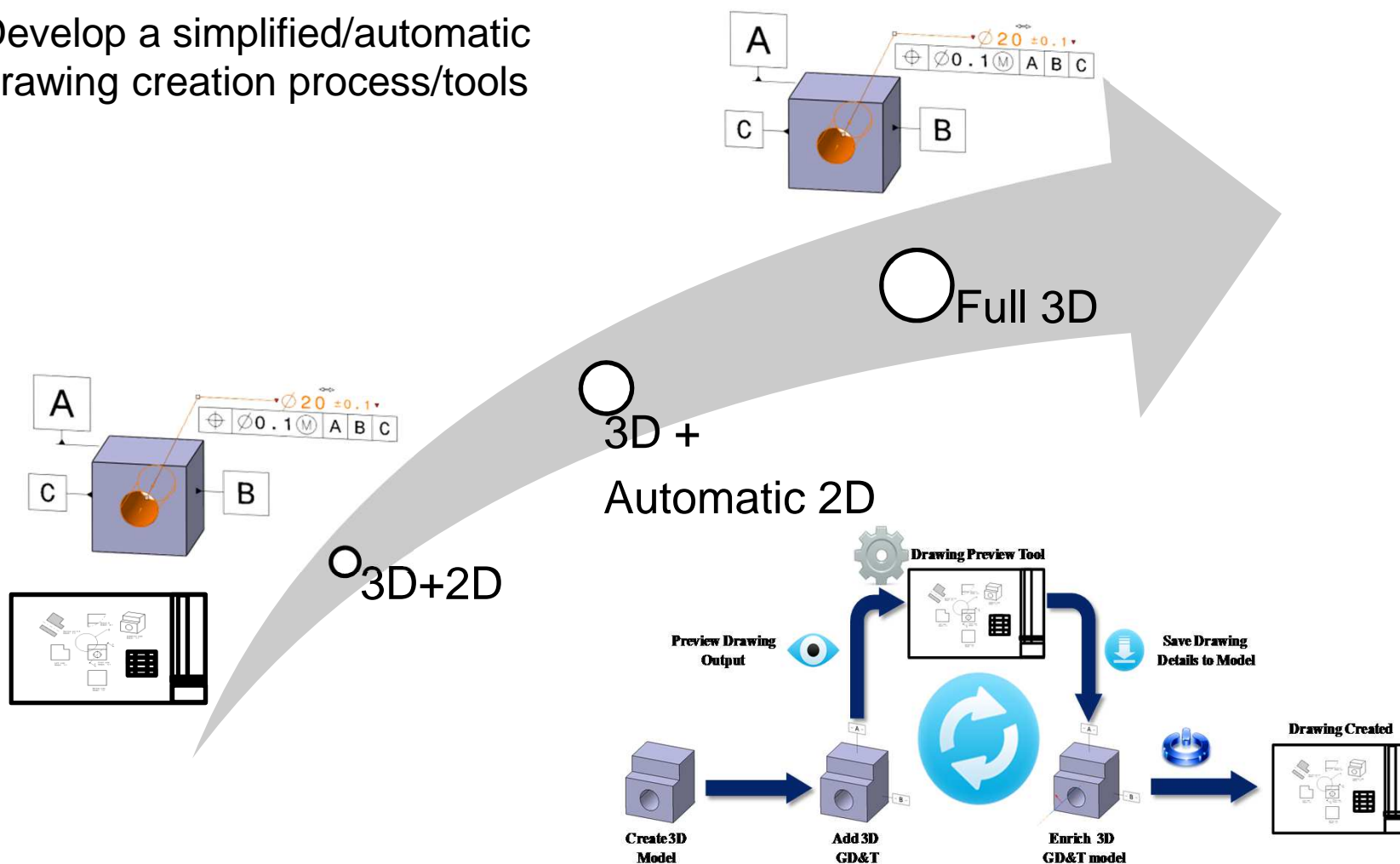
Drawing Automation Need

Drawing generation from 3D GD&T models is perceived as duplicate work, which hinders the move to a Model Based Environment. Model Based environment adds significant improvements to collaboration and GD&T Quality



How to Bridge the Gap in the Short Term?

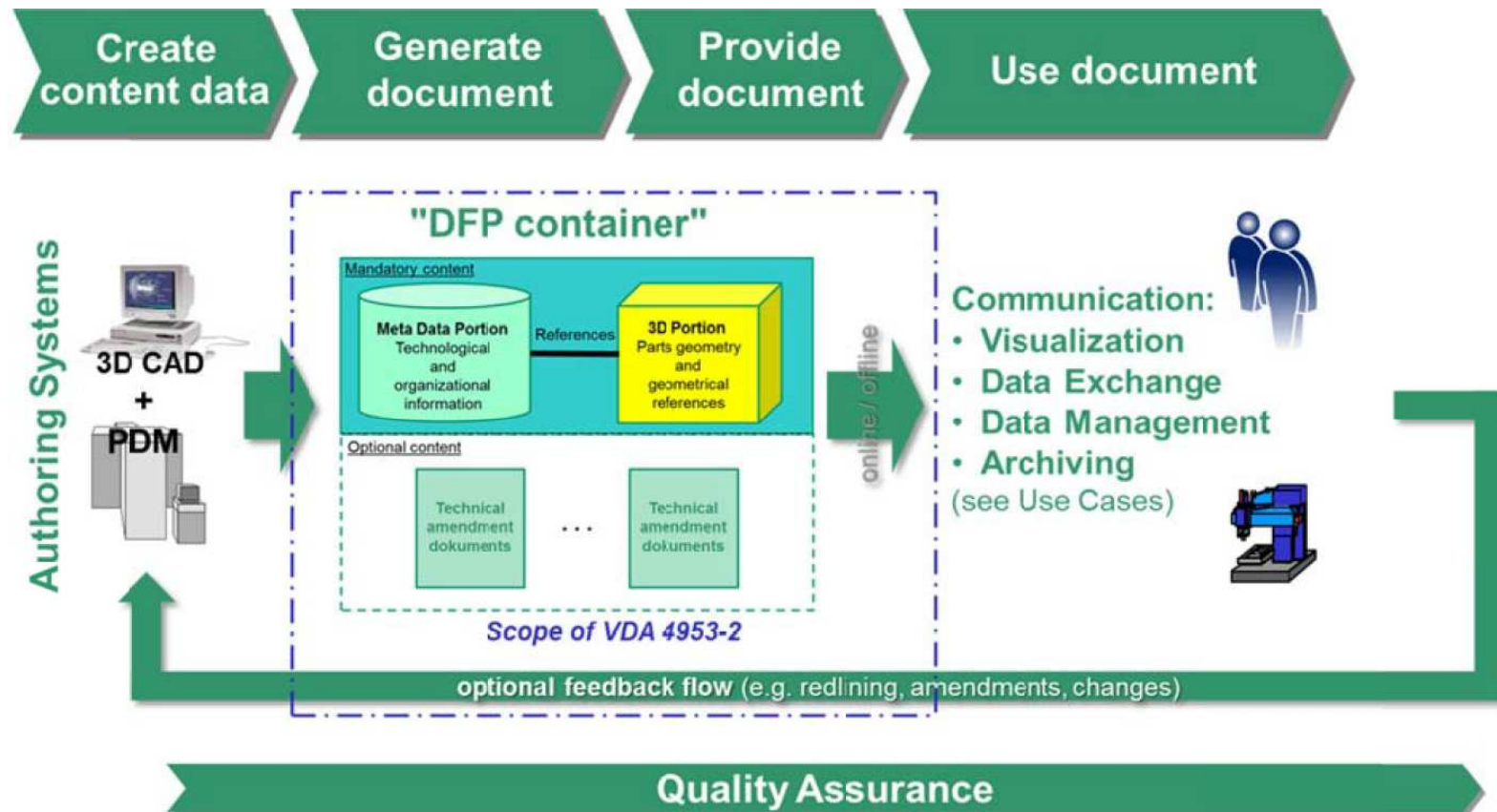
Develop a simplified/automatic
drawing creation process/tools



How to Bridge the Gap in the Long Term?

Drawing Free Product Documentation in a “Container”

That captures geometrical, technological and onrganizational (previously drawing) data of the product



MBE Self Assessment Tool



Model Based Enterprise Roadmap

MBE is an integrated and collaborative environment, founded on 3D product definition shared across the enterprise, enabling rapid, seamless, and affordable deployment of products from concept to disposal



Criteria	<div> <div>Level 1 2D Drawing Centric</div> <div>Level 2 2D & 3D Drawing Centric</div> <div>Level 3 3D Model Centric</div> <div>Level 4 Multi-3D Model Centric</div> </div>					
	2D	3D	Multi 3D	Level	Description	
Product & Supplemental Geometry				L1 L2 L3 L4	<ul style="list-style-type: none"> Part & Supplemental geometry information obtained solely from drawing. Product & Supplemental Geometry may exist in the 3D model but 	
					<div>1 Drawing Centric</div> <div>2 Model Centric</div> <div>3 Model Based Definition</div> <div>4 Model Based Enterprise</div>	
					<div>2D Master Drawing – 3D model not verified or configuration controlled</div> <div>2D Master Drawing w/ associative 3D model (Model is verified and configuration controlled)</div> <div>3D Master CAD Model with 3D annotations – 2D drawings by exception</div> <div>3D Master CAD Model with 3D annotations – Fully leveraged by the Enterprise</div>	
Dimensions				L1 L2	<ul style="list-style-type: none"> The 3D model may include dimensions, and if so, both representations must be in agreement. When all product definition is contained on the drawing, it must be noted. 	
Basic Dimensions						

Drawing Authority

Model Authority

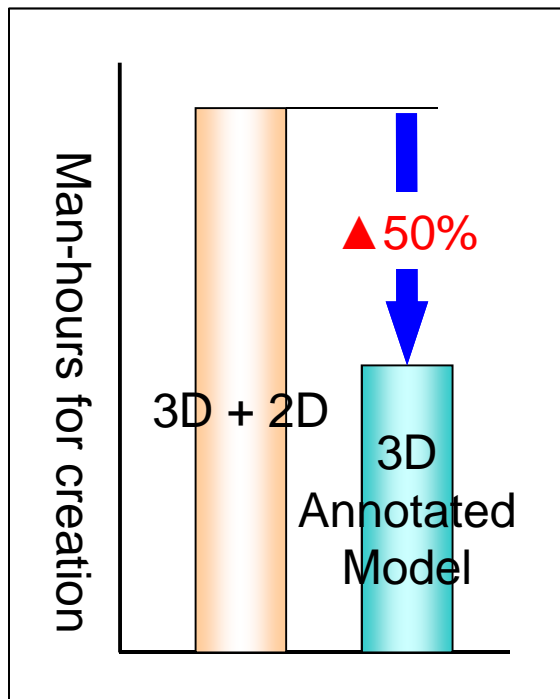
3D-MBE White Paper Content



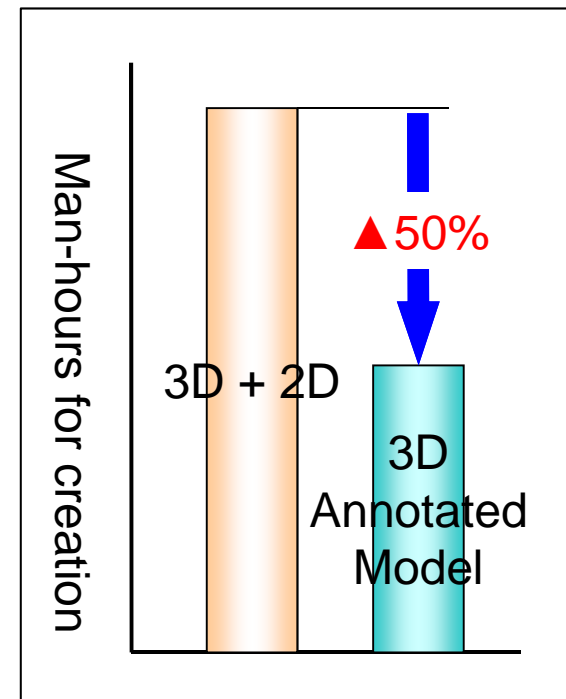
1. Introduction
 - What is 3D-MBE?
2. Background
 - History, workgroup scope, objectives
3. Current State of 3D-MBE in the Automotive Industry
 - Where we are
 - Survey results & observation summary
4. Future State
 - Where we are going
5. Usage & Benefits
 - Benefits & ROI (Return on Investment)
6. Transition to 3D-MBE
 - Maturity model & “how to move to next level”
 - Automatic 2D & Drawing Free Container
7. 3D-MBD Functional Requirements
 - Explanation & observations summary of CAD and Translator functional requirements activity - 5 use cases
8. Path to 3D-MBE
 - The How
 - Enablers & Roadblocks
9. Conclusion/Summary

Man-hour reductions Using 3D Annotated Model

Product Development



Manufacturing Work Instructions

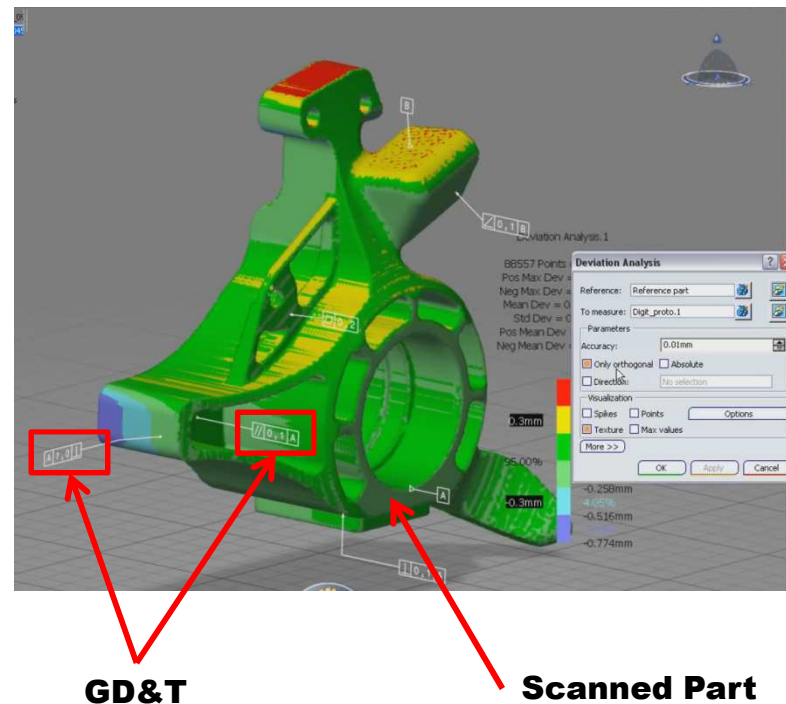


An OEM study validated a 50 % man-hour reduction using 3D Annotated Models

Virtual Verification

Virtual verification QSR/DSE (Compare a scanned part to 3D GD&T model) Higher priority for profile and position based callout in GD&T compare

Virtual verification can significantly reduce PPAP cost and be a powerful tool in 6 sigma studies

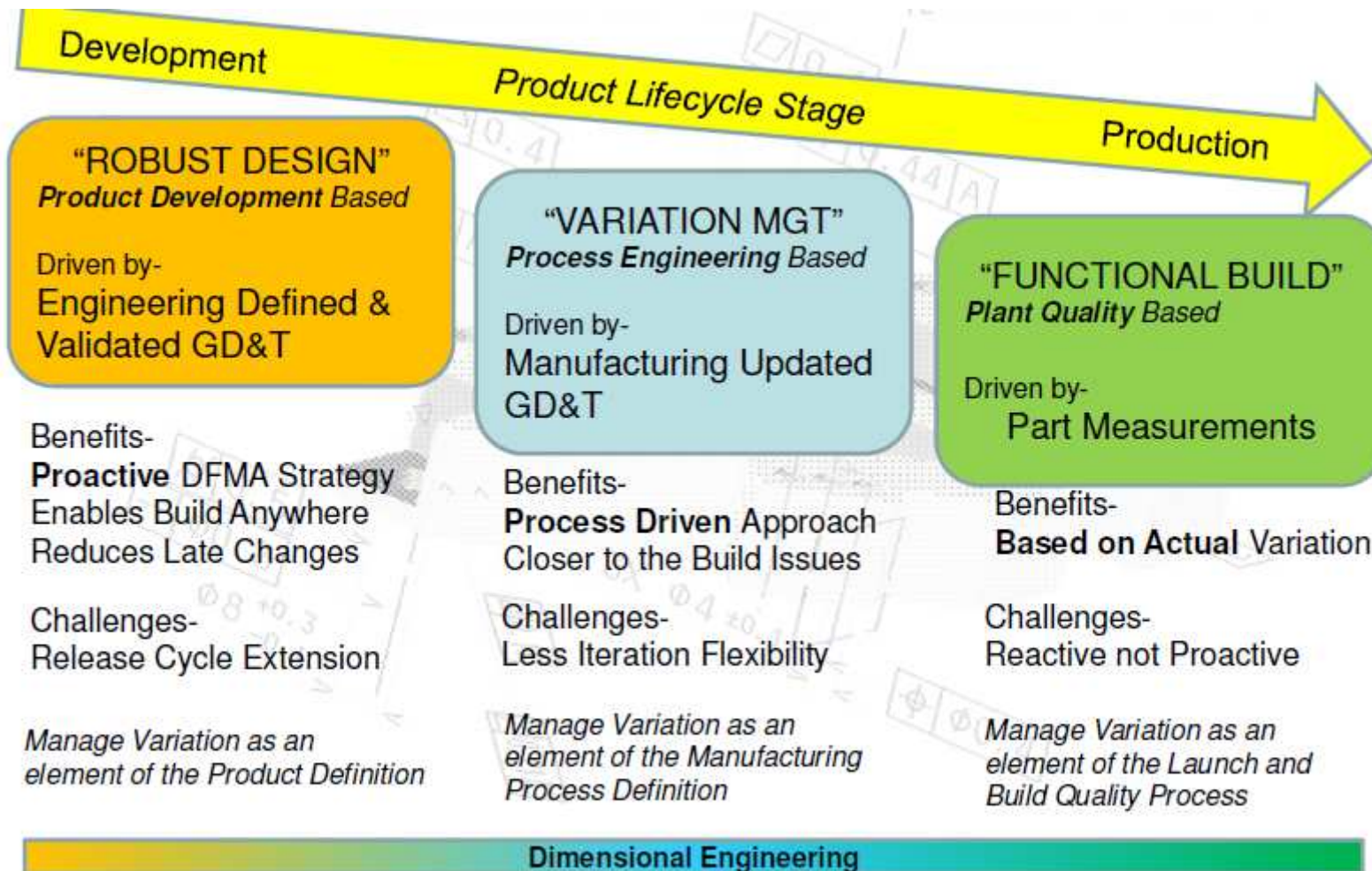


Model Based Dimensional Analysis



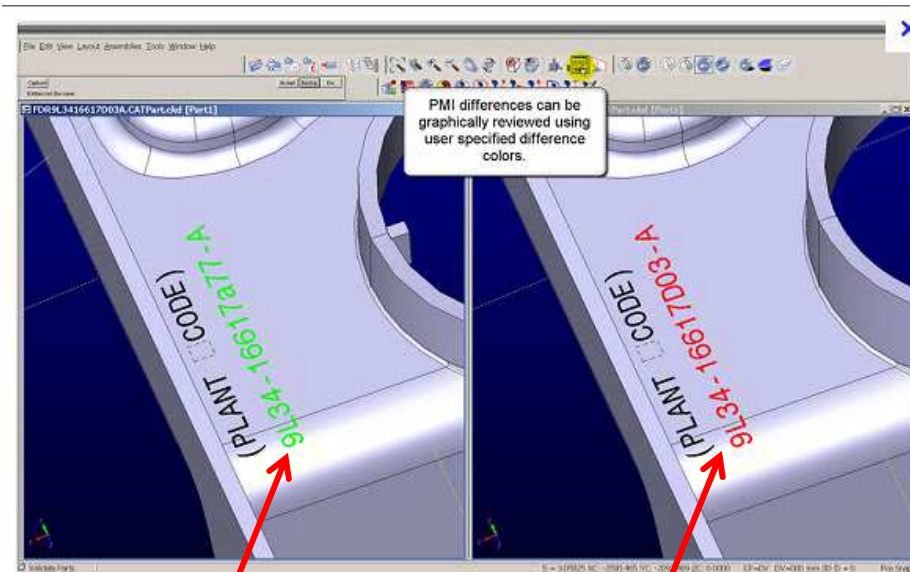
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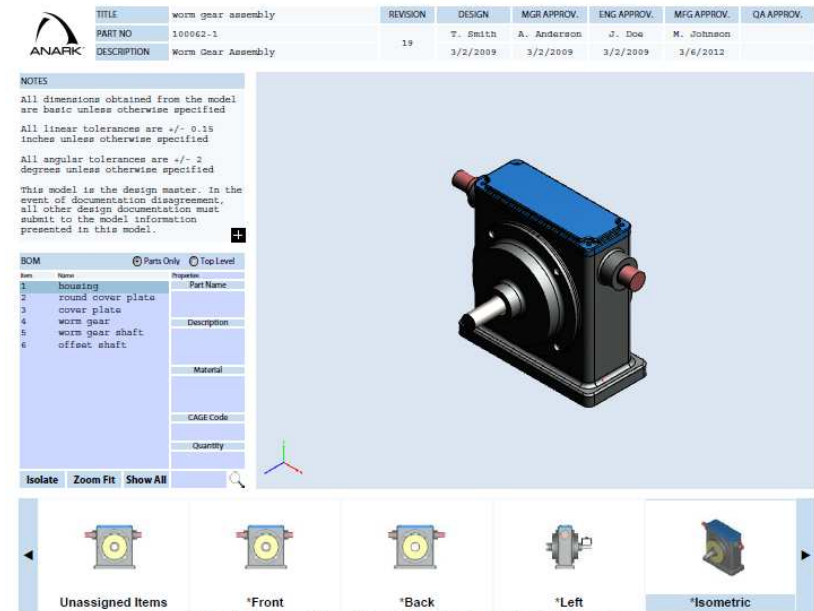
Technical Data Package

Release to Release GD&T Compare



New Annotations

Old Annotations



Supplier BOM Package

MBE Implementation: Important points to be considered

